

39-43. As for claim 36 and its dependent claims 37-38, Applicants note that the bare term "environment" is not used. Rather, that term is used in conjunction with qualifiers that provide guidance to one of ordinary skill in the art. Specifically, claim 36 refers to a "deposition environment" and an "etching environment." Applicants contend that one of ordinary skill in the art would understand a "deposition environment" to mean an area wherein conditions are such that a deposition process may take place. Applicants further contend that one of ordinary skill in the art would understand an "etching environment" to mean an area wherein conditions are such that an etch process may take place. Applicants' contentions are supported by the specification. (See Specification at p. 5, ln. 11 – p. 6, ln. 21; p. 7, last ¶ (addressing deposition); *see also* p. 7, ln. 7-14; p. 8, ln. 6-9 (addressing etching). Applicants stress, however, that the claims are not limited to the exemplary descriptions therein.) Accordingly, Applicants request the withdrawal of these rejections.

## II. Rejection of claims under §102

The Examiner rejected claims 1-8 and 10-14 as being anticipated by Fujita (U.S. Patent No. 5,084,413). Applicants assert that the claims contain limitations that are not disclosed by Fujita. More to the point, the claims contain limitations relating to plasma, whereas Fujita is silent concerning plasma. Claim 1, for example, requires an act of forming a polymer between a first feature and a second feature involving high-density plasma. Dependent claims 2-6 benefit accordingly. Independent claim 7 requires an act of plasma-depositing a material within a recess. Dependent claims 8 and 10-12 incorporate this limitation and are therefore similarly distinguished. Independent claim 13 requires exposing an opening to a plasma, as does dependent claim 14. Accordingly, Applicants request the withdrawal of these §102 rejections.

### III. Rejection of claims under §103

The Examiner rejected claims 1-8, 10-14, 19, 23-24, 29-32, and 36-43 as being obvious. One combination of references cited against these claims is Fujita, Numata (U.S. Patent No. 4,759,958), and Zenke (U.S. Patent No. 5,441,594). The second combination is somewhat unclear from the Office Action, but Applicants presume that the second combination is Fujita, Numata, and Wang (U.S. Patent No. 5,354,715).

#### A. Rejection of claims under Fujita, Numata, and Zenke

Concerning the first combination – Fujita, Numata, and Zenke – Applicants note that an obviousness rejection requires that the multiple prior art references teach, suggest, or provide an incentive to one of ordinary skill in the art to combine the references. (*See United States Surgical Corp. v. Ethicon Inc.*, 103 F.3d 1554, 1564, 41 U.S.P.Q.2d 1225, 1233 (Fed. Cir. 1997), *cert. denied*, 522 U.S. 950 (1997).) Further, when the prior art contains conflicting references, the ability of each reference to suggest solutions to one of ordinary skill in the art must be considered. (*See In re Young*, 927 F.2d 588, 18 U.S.P.Q. 1089 (Fed. Cir. 1991).) (Copies of these cases are included in an appendix to this Amendment.) Applicants assert that the Examiner has not articulated the motivation to combine, or the combination itself, to the extent necessary to satisfy the *prima facie* burden for rejection. Moreover, Applicants assert that the *prima facie* burden cannot be met using this combination because the references conflict to such an extent that one of ordinary skill in the art would be actively discouraged from combining them. Such problems are highlighted by reviewing any two of the three references in the attempted combination.

### 1. Problems highlighted by Fujita and Numata

Regarding Fujita and Numata, Applicants first note that it is unclear exactly how the Examiner proposes to combine their teachings. The Examiner describes Fujita as disclosing

forming an oxide layer on a silicon substrate, and forming a contact hole in the oxide. . . . depositing a poly layer in the hole by CVD and depositing a polymer resist over the poly and the hole. The polymer layer is then dry etched back and the poly is etched using the polymer mask. The resist is then removed.

(Office Action dated 8/6/01 at 3, ¶3 (reference numbers omitted)). The Examiner then announces that "Numata et al. teach CVD formation of a polymide (sic) layer." (*Id.* at ¶4.) Without comment as to the propriety of the Examiner's interpretation of the references, Applicants are unclear how the Examiner intended to mesh Numata's formation of a polyimide layer into Fujita's process flow. That lack of clarity indicates a failure to meet the *prima facie* burden for rejection.

Assuming it is intended that Numata's formation of a polyimide layer could be used to deposit what the Examiner terms Fujita's "polymer resist," Applicants note that the references teach against that. The goal of Fujita is to selectively deposit metal into a contact hole. (Fujita at Abstract, Summary.) Fujita indicates that depositing the metal in that way requires having previously provided a polysilicon layer that is only in the contact hole. (*Id.* at col. 3, ln. 42 - col. 4 ln. 13; FIG. 7-8.) Providing a polysilicon layer that is only in the contact hole, in turn, requires having provided resist in the contact hole before etching away any unwanted portions of the polysilicon layer. (*Id.* at col. 3, ln. 38-41; FIG. 6.) Hence, Fujita requires depositing its resist *before* depositing its metal. Numata, on the other hand, teaches providing its polyimide layer *after* depositing a metal, as the metal helps Numata's polyimide layer adhere. (Numata at col. 4, ln. 1-7.) Thus, the teachings in Fujita and Numata are in direct opposition to each other, thereby discouraging one of ordinary skill in the art from attempting to combine their teachings. More specifically,

one of ordinary skill in the art is led to believe that there may be adhesion problems if an attempt is made to integrate Numata's process into Fujita's flow.

## 2. Problems highlighted by Numata and Zenke

Numata and Zenke highlight additional problems. For example, the Examiner cited Zenke, indicating that it provides motivation to deposit polymer. (Office Action at ¶4.) A careful reading of Zenke, however, demonstrates that Zenke views polymer formation as an undesirable yet unavoidable effect. For instance, in Zenke's contact hole example, Zenke warns that the film formed therein contains hydrocarbon polymer that will increase contact resistance. (Zenke at col. 3, ln. 61-65.) Hence, Zenke's invention is directed to removing that undesired polymer. The Examiner's misinterpretation negates the Examiner supposed motivation, thereby providing another example of the failure to meet the *prima facie* burden for rejection. Moreover, Because Zenke's process already creates a film containing polymer, there is no need to modify or supplement Zenke's process to incorporate Numata's polymer-formation method, as doing so would add unnecessary redundancy. Thus, one of ordinary skill in the art would lack motivation to combine the teachings. Further, Zenke's characterization of the polymer layer as undesirable puts it in direct conflict with Numata, which touts the benefits of polymer layers (Numata at col. 1, ln. 7-11; col. 5, ln. 44-50). Such a fundamental conflict would actively discourage one of ordinary skill in the art from attempting to combine the teachings of Numata and Zenke. Therefore, Applicants assert that the *prima facie* burden for rejection cannot be met if it is based on a combination including these references.

## 3. Problems highlighted by Fujita and Zenke

There are also conflicts between the teachings in Fujita and Zenke that further discourage one of ordinary skill in the art from attempting the Fujita-Numata-Zenke combination. Fujita, for example, proposes forming a hole in an insulation layer overlying a silicon substrate. (Fujita at col. 2, ln. 64- col. 3, ln. 3; FIG. 2) The hole

exposes the substrate, and a polysilicon film is deposited in the hole. (*Id.* at col. 3, ln. 4-19; FIG. 3.) Zenke's teachings, however, suggest that such a process is unworkable. Specifically, Zenke indicates that, in forming a hole in overlying insulation so as to expose the silicon substrate, the substrate will oxidize, suffer damage, and become contaminated with heavy metal and hydrocarbon substances. (Zenke at col. 1, ln. 37-66; col. 8, ln. 7-27; FIGS. 1 & 7A) As a result, the subsequently deposited polysilicon will exhibit high contact resistance with respect to the substrate. (*Id.* at col. 3, ln. 61-65; FIG 1.)

Another point of conflict between these references concerns the conductive material used to fill the respective contact holes. Zenke teaches that it is acceptable to use only polysilicon for a contact. (Zenke at col. 8, ln. 52-58 and FIGS. 7C & 7D (describing and illustrating a polysilicon contact to the substrate); col. 9, ln. 42- col. 10, ln. 39 and FIG. 9C (describing and illustrating an upper-level polysilicon interconnect).) Fujita, on the other hand, is clearly aware of the benefits of polysilicon, as Fujita uses it to line its contact hole. However, Fujita implicitly rejects using polysilicon as the contact material itself with its emphatic teachings concerning holes that are "completely filled with metal." (Fujita at col. 1, 59-63; see also Abstract (teaching that the contact is "filled up with tungsten"); col. 1, ln. 10-13 (indicating that Fujita's invention is directed to "filling a contact hole with a metal"); col. 2, ln. 4-5 (reiterating that Fujita's "contact hole is filled up with . . . metal"); col. 2, ln. 55-56 (specifying that Zenke's "contact hole 16 is filled with tungsten"); col. 4, ln. 6-13 (touting the short time period in which "contact hole 16 can be filled up with tungsten"); col. 4, ln. 18-19 (describing Zenke's contact hole as being "completely filled with tungsten"); col. 5, ln. 5 (reiterating that the contact is "filled up with tungsten"); claim 1 (claiming a "method for filling a contact hole with a metal").

Thus, given the Examiner's misinterpretation of the references and flawed articulation of a motive of one of ordinary skill in the art to combine the cited references, Applicants submit that the *prima facie* burden for rejection has not been met. Moreover, given the contradictory teachings between Fujita and Numata, between Numata and

Zenke, and between Fujita and Zenke, Applicants submit the *prima facie* burden for rejection cannot be met relying on a combination of Fujita, Numata, and Zenke.

#### B. Rejection of claims under Fujita, Numata, and Wang

The second combination used as a basis for rejection suffers similar problems as the first combination. For example, the conflicts between Fujita and Numata that discourage the first combination makes this second combination just as untenable. As for the Examiner's use of Wang in this combination, Applicants contend that the Examiner has failed to articulate a motive for one of ordinary skill in the art to combine Wang with any of the other references. In addition, the Examiner's premise for citing Wang appears faulty. Specifically, the Examiner cites Wang against claims 1 and 10-13 in an attempt to demonstrate "equipment settings and deposition conditions that overlap applicant's (sic) ranges." (Office Action at ¶4.) Claims 1 and 10-13, however, do not contain range limitations.

Thus, given the Examiner's misinterpretation of the claims and lack of articulation of a motive for one of ordinary skill in the art to combine the cited references, Applicants submit that the *prima facie* burden for rejection has not been met. Moreover, given the contradictory teachings between Fujita and Numata, Applicants submit the *prima facie* burden for rejection cannot be met relying on a combination of Fujita, Numata, and Wang.

#### IV. Rejection of claims for double patenting

The Examiner rejected claims 9, 13, 23-24, 29, and 44 under "same invention" type double patenting, arguing that those claims are coextensive in scope with claims 1-2, 6, 10, and 13 from the parent patent -- U.S. Patent 6,117,764 by Figura. First, Applicants note that claims 9 and 44 are not pending. As for claims 13, 23-24, and 29, Applicants contend that they are not coextensive in scope with the claims in Figura. To supplement

the following discussion, Applicants have included a chart in an appendix illustrating a side-by-side comparison between the relevant pending claims and Figura's claims.

A review of the chart indicates that, while pending claim 13 contains similar language to that of Figura's claim 2, pending claim 13 is broader in that it does not specify that the plasma provided is a high-density plasma having a density higher than  $10^{10}/\text{cm}^3$ . Pending claim 23 and its dependent claim 24 contain language similar to that of Figura's claim 6, but neither requires the acts of (1) defining a recess between said exposed metal lines; (2) filling said recess with said polymer; and (3) allowing a formation of said polymer above said exposed metal lines, as required by Figura's claim 6. Pending claim 29 contains language similar to that of the first three acts listed in Figura's claim 10. Pending claim 29, however, does not require the additional acts listed in Figura's claim 10. Applicants further contend that the language in Figura's claims 1 and 13 are dissimilar to that found in the relevant pending claims.

#### Conclusion

In light of the above amendments and remarks, Applicants submit that claims 1-8, 10-14, 19, 23-24, 29-32, and 36-43 are allowable over the applied references and in light of the statutory requirements. Therefore, Applicants respectfully request reconsideration of the Examiner's rejections and further request allowance of all of the pending claims. Please address further correspondence with this application to: Charles B. Brantley, II, Micron Technology, Inc., Mail Stop 525, 8000 S. Federal Way, Boise, ID 83706-9632, telephone number (208) 368-4557.

MICRON, TECHNOLOGY, INC.

Date 11/6/11

Charles B. Brantley II

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#### Appendix 1

*United States Surgical Corp. v. Ethicon Inc.*, 103 F.3d 1554, 41 U.S.P.Q.2d 1225, (Fed.

Cir. 1997), *cert. denied*, 522 U.S. 950 (1997); and

*In re Young*, 927 F.2d 588, 18 U.S.P.Q. 1089 (Fed. Cir. 1991)



**U.S. Court of Appeals  
Federal Circuit**

United States Surgical Corp. v. Ethicon Inc.

Nos. 94-1386, -1419

Decided January 3, 1997

**PATENTS**

**1. Patentability/Validity — Obviousness —  
In general (§115.0901)**

**JUDICIAL PRACTICE AND  
PROCEDURE**

**Procedure — Jury trials (§410.42)**

Federal district court properly instructed jury on issue of obviousness in patent infringement action, since jury was correctly instructed on presumption of validity and that defendant bore burden of proving invalidity by clear and convincing evidence, and that it was necessary to consider scope and content of prior art, differences between prior art and claimed invention, level of ordinary skill in art, and objective criteria of non-obviousness, since instructions included explanation of principles to be applied in determining obviousness when invention is combination of prior art components, and since instructions were correct in law, thorough, and clearly stated.

**PATENTS**

**2. Patentability/Validity — Obviousness —  
In general (§115.0901)**

**Patent construction — Claims — In general  
(§125.1301)**

Federal district court need not repeat or restate every claim term in order to comply with rule that claim construction is for court rather than jury, since claim construction is matter of resolution of disputed meanings and technical scope, to clarify and if necessary explain what patentee covered by claims, for use in determination of infringement, rather than obligatory exercise in redundancy; although claim construction may occasionally be necessary in obviousness determinations, when meaning or scope of technical terms and words of art is unclear and requires resolution in order to determine obviousness, in present case none of rejected jury instructions concerning claim construction was directed to, or has been reasonably shown to affect, determination of obviousness.

**PATENTS**

**3. Patentability/Validity — Obviousness —  
In general (§115.0901)**

**JUDICIAL PRACTICE AND  
PROCEDURE**

**Procedure — Jury trials (§410.42)**

Federal district court did not commit prejudicial error by providing dictionary to jury during its deliberations in patent infringement trial in which asserted claims were held invalid for obviousness, since district court explained in post trial opinion that jury instruction to consider ordinary meaning of claim language, and general assumption that definitions of dictionary are common knowledge with which jury is charged, support provision of dictionary, since provision of dictionary to jury, although not favored, is not grounds for new trial, and since plaintiff has offered no specifics as to words whose dictionary definitions may have adversely affected verdict of obviousness, and no suggestion that jury disregarded court's instructions on law of obviousness or plain meaning of terms used in claims and prior art.

**PATENTS**

**4. Patentability/Validity — Obviousness —  
In general (§115.0901)**

**Patent construction — Claims — In general  
(§125.1301)**

**JUDICIAL PRACTICE AND  
PROCEDURE**

**Procedure — Jury trials (§410.42)**

Federal district court's rejection of proposed jury instructions directed to construction of patent claims did not prejudice jury's determination of obviousness, since district court is not required to parse claims for jury in every case, whether or not there is issue in material dispute as to meaning or scope of claims, since infringement plaintiff has not shown that there are unclear or ambiguous technical terms or words of art or related aspects of claim scope whose "construction" would negate verdict of obviousness; and has not explained how any reasonable claim construction it requested would have deprived obviousness verdict of its support, and since trial court is not authorized to remove from jury factual findings underlying obviousness determination.

**Particular patents — General and mechanical — Surgical clip application**

5,084,057, Green, Bolanos, Young, McGarry, Heaton, and Ratcliff, apparatus

and method for applying surgical clips in laparoscopic or endoscopic procedures, judgment that claims 1, 2 and 7 are invalid for obviousness affirmed.

5,100,420, Green, Bolanos, Young, McGarry, Heaton, and Ratcliff, apparatus and method for applying surgical clips in laparoscopic or endoscopic procedures, judgment that claim 1 is invalid for obviousness affirmed.

On remand from the U.S. Supreme Court. Action by United States Surgical Corp. against Ethicon Inc. and Johnson & Johnson Hospital Services Inc. for patent infringement. The U.S. District Court for the District of Connecticut entered judgment for defendants on jury verdicts that plaintiff's patent no. 5,100,420 is infringed but invalid for obviousness, and that plaintiff's patent no. 5,084,057 is not infringed and invalid for obviousness. On appeal, the U.S. Court of Appeals for the Federal Circuit affirmed without opinion pursuant to Fed. Cir. R. 36. Following grant of certiorari, the U.S. Supreme Court vacated that affirmance and remanded for further consideration in light of its decision in *Markman v. Westview Instruments Inc.* (38 USPQ2d 1461). On remand, district court's judgment is affirmed on ground of invalidity of patents in suit based on obviousness.

William E. McDaniels, J. Alan Galbraith, and David S. Blatt, of Williams & Connolly, Washington, D.C.; Basam E. Nabulsi, Thomas R. Bremer, and John C. Andres, Norwalk, Conn., for plaintiff-appellant.

David F. Dobbins, Gregory L. Diskant, and Eugene M. Gelernter, of Patterson, Belknap, Webb & Tyler, New York, N.Y., for defendants/cross-appellants.

Before Newman, circuit judge, Bennett, senior circuit judge, and Rader, circuit judge.

Newman, J.

The court's prior judgment of this appeal and cross-appeal was vacated by the Supreme Court and remanded "for further consideration in light of *Markman v. Westview Instruments, Inc.*, 517 U.S. \_\_\_\_\_ (1996)." *U.S. Surgical Corp. v. Ethicon, Inc.*, 116 S. Ct. 1562 (1996). Our prior judgment affirmed the judgment of the United States District Court for the District of Connecticut,<sup>1</sup> entered on jury verdicts that claim 1 of

<sup>1</sup> *U.S. Surgical Corp. v. Ethicon, Inc.*, No. 5:92 CV 00134 (AVC), (D. Conn. Feb. 11, 1993 (Summary Judgment); February 18, 1994 (Judgment Order); June 9, 1994 (Ruling on Post-trial Motions)).

U.S. Surgical's United States Patent No. 5,100,420 (the '420 patent) is infringed but invalid for obviousness, and that claims 1, 2, and 7 of United States Patent No. 5,084,057 (the '057 patent) are not infringed and are invalid for obviousness. The issue of inequitable conduct during patent prosecution was decided before trial, by summary judgment in favor of U.S. Surgical. Each of U.S. Surgical and Ethicon appealed the rulings adverse to it. After full briefing and oral argument this court entered judgment pursuant to Federal Circuit Rule 36:

Rule 36: Judgment of affirmance without opinion.—

The court may enter a judgment of affirmance without opinion, citing this rule, when it determines that any of the following circumstances exist:

(a) the judgment, decision or order of the trial court appealed from is based on findings that are not clearly erroneous;

(b) the evidence in support of a jury verdict is sufficient;

(c) summary judgment, directed verdict, or judgment on the pleadings is supported by the record;

(d) the decision of an administrative agency warrants affirmance under the standard of review in the statute authorizing the petition for review; or

(e) a judgment or decision has been entered without an error of law;

and an opinion would have no precedential value.

Appeals whose judgments are entered under Rule 36 receive the full consideration of the court, and are no less carefully decided than the cases in which we issue full opinions. The Rule permits the court to dispense with issuing an opinion that would have no precedential value, when the circumstances of the Rule exist. See *Taylor v. McKeithen*, 407 U.S. 191, 194 n.4 (1972). ("We, of course, agree that the courts of appeals should have wide latitude in their decisions of whether or how to write opinions. That is especially true with respect to summary affirmances.")

Seven weeks after this decision, reported at 48 F.3d 1237 (Fed. Cir. 1995) (Table), for which rehearing and rehearing *en banc* were denied, the Federal Circuit decided *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 34 USPQ2d 1321 (Fed. Cir. 1995) (*en banc*). The Supreme Court granted certiorari in *Markman* and also upon U.S. Surgical's petition. After deciding the *Markman* appeal, reported at 517 U.S., 116 S. Ct. 1384, 38 USPQ2d 1461 (1996), the Court instructed the Federal Circuit to give further consideration to U.S. Surgical's case in light of the



The instrument is depicted in the '057 patent with a different handle, as follows:

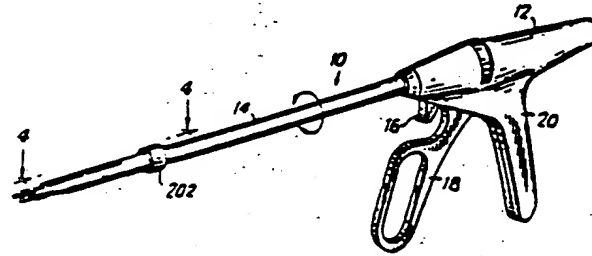


Fig. 1 of '057 patent.

It is seen that these instruments have an elongated shank that holds the ligating clips and is shaped for endoscopic use through a trocar. After insertion into the body cavity a clip is pushed into position in the jaws using controls on the handle; and the clip is applied to the tissue to be ligated by closing the jaws using controls on the handle. The jaws are then opened and the next clip is pushed into position. Thus successive clips may be applied without withdrawing the instrument from within the body.

Claim 1 of the '420 patent is directed to the combination of the trocar and the clip applier, each component having defined limitations. Claim 1 is the only '420 patent claim in suit:

1. In combination:

a) a trocar having a cannula, and valve means for sealing said cannula, said cannula being adapted for entry into a body cavity;

b) an endoscopic clip applier having:

i) a frame;

ii) an endoscopic portion defining a longitudinal axis and extending distally from said frame, said endoscopic portion being insertable into said cannula through said valve means in sealing engagement therewith, said endoscopic portion further including a plurality of surgical clips disposed in an array and clip closing means for sequentially closing said surgical clips; and

iii) seal means associated and adapted to cooperate with at least one of said endoscopic portion and said frame to obstruct passage of gaseous media from the body cavity.

Claim 1, the broadest claim of the '057 patent, also describes the endoscopic apparatus as comprising several elements. The claim elements are defined in terms of their function, as provided in 35 U.S.C. § 112 ¶6:

1. An apparatus for endoscopic application of surgical clips to body tissue which comprises:

a) frame means;

b) endoscopic means connected to said frame means of generally elongated configuration and extending distally from said frame means and including:

i) means for storing a plurality of surgical clips;

ii) means for individually advancing said clips to the distal portion of said endoscopic means for positioning adjacent the body tissue to be clipped;

iii) means for at least partially closing said clip at least sufficient to grip the body tissue after the clip has been advanced distally to said distal portion of said endoscopic means; and

iv) gaseous sealing means.

Claim 2 of the '057 patent specifies the use of silicon grease as the gaseous sealing means of clause iv, and claim 7 is directed to a disposable device as in claim 1.

Ethicon's defense that the claims are invalid for obviousness was based on the ground that U.S. Surgical had merely adapted to endoscopic use its own, prior art multiple clip applier, the Premium Surgiclip of the '226 patent, by known and routine adaptation. Thus Ethicon presented evidence and argument that U.S. Surgical had simply elongated the body of its prior art multiple clip applier so that it could be used through a trocar, with a sealing means to prevent escape of the insufflating gas through the trocar. Ethicon adduced extensive evidence that such adaptation was well known to persons of ordinary skill in the field of endoscopic instruments. U.S. Surgical countered with evidence and argument to the contrary.

The jury held, by special verdicts, that the claims in suit were invalid for obviousness. On appellate review, we determine whether, on correct instructions of law, there was substantial evidence whereby a reasonable jury could have reached the verdict reached by this jury. See *Litton Sys., Inc. v. Honeywell, Inc.*, 87 F.3d 1559, 1566, 39 USPQ2d

1321, 1324 evidence de of evidence ably afford *Ketsu Kinz* F.3d 857, 81 Cir. 1995) relevant evi as could be adequate to ing evidenc as resolved favor the j must give a choices in v between op factual inf *Motor Co.*, (Fed. Cir. function is basis [of th ent, it bein draw a co other com (quoting *L* 653 (1946) *Inc.*, 799 F (Fed. Cir. (1987).

*The Prior*

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1321, 1324 (Fed. Cir. 1996) ("Substantial evidence describes that minimum quantum of evidence from which a jury might reasonably afford relief."); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 72 F.3d 857, 862, 37 USPQ2d 1161, 1163 (Fed. Cir. 1995) ("Substantial evidence is such relevant evidence, on the record as a whole, as could be accepted by a reasonable mind as adequate to support the verdict.") Conflicting evidence and argument must be viewed as resolved favorably to the party in whose favor the jury found. The reviewing court must give appropriate deference to the jury's choices in weighing the evidence, in deciding between opposing positions, and in drawing factual inferences. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) ("the appellate court's function is exhausted when that evidentiary basis [of the jury's verdict] becomes apparent, it being immaterial that the court might draw a contrary inference or feel that another conclusion is more reasonable.") (quoting *Lavender v. Kurn*, 327 U.S. 645, 653 (1946)); *Medtronic, Inc. v. Intermedics, Inc.*, 799 F.2d 734, 742, 230 USPQ 641, 646 (Fed. Cir. 1986), *cert. denied*, 479 U.S. 1033 (1987).

#### The Prior Art

As we have remarked, Ethicon's position was that U.S. Surgical had simply elongated its prior art multiple ligating instrument so that it could be inserted through a trocar, and used known endoscopic sealing mechanisms to inhibit escape of the insufflating gas through the trocar. Expert witnesses testified that these modifications were well known to persons of ordinary skill in the art of endoscopic instruments. The witnesses presented several prior art patents, and exhibited many actual instruments, all having the common endoscopic characteristics of an elongated body and sealable engagement with the trocar.

The district court mentioned, in the opinion accompanying the denial of post-trial motions, that U.S. Surgical's technical expert testified that there were approximately forty different prior art multiple clip applicators for conventional open surgery. He testified that at least four of them — the Premium Surgiclip of the '226 patent and the multiple clip applicators shown in the Montgomery patent, the Peters patent, and the Lachakar patent — embodied all of the elements of the '420/'057 claims except for the elongated body and sealing means. He testified that an elongated body and sealing means are characteristics of all endoscopic surgical instru-

ments. In evidence were a variety of actual instruments for endoscopic surgery, all having these characteristics. These endoscopic instruments included graspers, scissors, dissectors, and single clip applicators. All had an elongated body and were adapted for sealing engagement with the trocar.

Also in evidence were references describing prior endoscopic devices for the application of multiple fasteners other than ligating clips. U.S. Patent No. 3,870,048 to Yoon showed an applicator for multiple elastic rings for ligating fallopian tubes, stating that "[i]t is possible to load suture ring clips within the applicator in end-to-end series fashion. . . . This permits a number of clips to be applied during a procedure without the need of having to withdraw the applicator from the surgical field in order to load another clip into the applicator." U.S. Patent No. 4,226,239 to Polk also showed an instrument for endoscopic application of multiple ligating rings. The prior art also included at least one endoscopic multiple staple applier, Patent No. 4,944,443 to Oddsen. All of the endoscopic instruments for applying multiple fasteners had the common characteristics of elongation for use through a trocar, and most were sealed against escape of the gas through the trocar. Several references showed the use of silicon grease, as specified in claim 2 of the '057 patent, or valves, as specified in claim 1 of the '420 patent, to maintain the seal.

The testimony of U.S. Surgical's technical expert that the elongated body and the seal are common characteristics of endoscopic instruments was described by Ethicon as a concession of great weight. This evidence was stressed at trial, as Ethicon pressed its argument that U.S. Surgical had simply adapted its '226 patent multiple clip applicator for endoscopic use, and that it was obvious to do so, pointing to many other instruments that had been adapted in the same way. U.S. Surgical points out that this same expert and several other expert witnesses testified about the difficulties of designing the '420/'057 endoscopic multiple clip applicator and the time and cost involved. We take note of the conflicting testimony and the opposing expert opinions of witnesses for these parties, and of the lengthy explorations by these witnesses of this technology and the development and characteristics of these surgical instruments.

In comparing the '420/'057 instruments with the prior art instruments, Ethicon's patent expert testified that the prior art '226 patent was the closest prior art and that the relevant elements of the structure of the '226 patent "were adopted into the subject matter of the '057 and '420 patent applications."

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ns. specifies the use as sealing means is directed to a 1 l. e claims are in- based on the id merely adapt- , prior art multi- Surgiclip of the routine adapta- ed evidence and cal had simply rior art multiple e used through a is to prevent es- through the tro- ive evidence that own to persons of f endoscopic in- untered with evi- contrary. verdicts, that the for obviousness: ermine whether, law, there was by a reasonable e verdict reached s., Inc. v. Honey- 66, 39 USPQ2d

Ethicon's technical expert pointed out to the jury all of the similarities of the structure and mechanisms between the device of the '226 patent and the '420/'057 patents. He pointed to the jaws to hold the clip, the pusher for advancing a stored clip to the

jaws, the grooves in the face of the jaws to receive the clip, and the mechanism for closing the clip about the tissue to be ligated. The drawings of the jaws in the '226 patent and in the '420/'057 patents show this similarity:

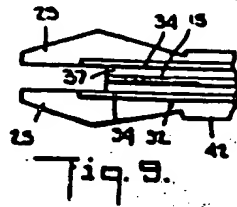


Fig 9 of 226 Patent

Witnesses testified that the operation of the '226 instrument and the '420/'057 patents was essentially the same. It was explained that in both the '226 and the '420/'057 instruments the jaw blade, clip carrier, and pusher bar are all enclosed in a channel assembly from which the jaws protrude at the end. In the '226 patent the applicator is described in the Abstract as:

The surgical clip applicator has a pusher bar which positions the foremost clip from a clip carrier into a ready-to-fire position between the jaws prior to squeezing of the handles together. When the applicator is fired, the previously positioned surgical clip can be crimped about a vessel and when the jaws are released, a new clip is placed between the jaws for the next firing. A channel assembly moves over the jaws to close the jaws while the pusher bar

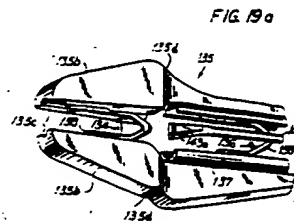


Fig 19a of 420 Patent

is retracted into the clip carrier for delivering the foremost clip from the carrier upon release of the handles.

Referring to Fig. 4 of the '226 patent, it was explained at trial that the pusher bar (35) moves a clip (33) into the channels in the faces of the jaws (25). When a clip is in the jaws and the handles are closed, the external channel (38) moves forward over the beveled portion of the jaws, which, by virtue of their beveled shape, are squeezed together by the external channel, thus closing the clip. At the same time, the pusher bar moves back to engage the next clip in line. When the handle is released the channel withdraws, the jaws open and release the clipped tissue, and the pusher bar moves forward, positioning the next clip into the jaws. The operating components are shown in the patent as follows:

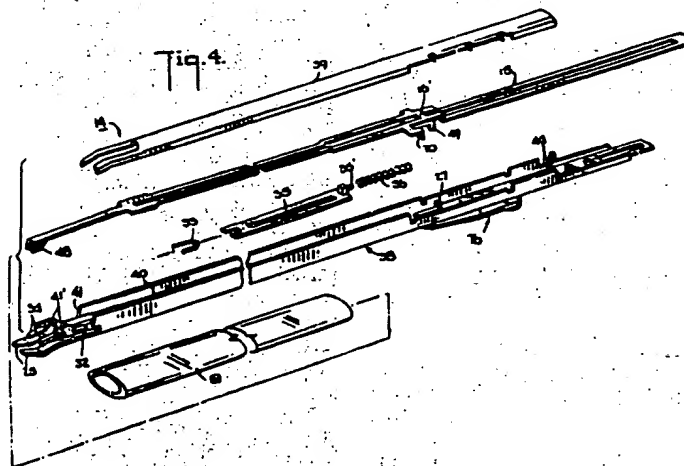


Fig 4 of 226 Patent

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the face of the jaws to the mechanism for closing tissue to be ligated. As in the '226 patent, the '420 patent shows this

In the '226 patent the clip carrier is described as "an elongated channel having a pair of side walls or rails between which the clips are slidably guided, a pusher which

slides between the rails, and a spring for biasing the pusher in the forward direction." Col. 4, lines 45-54. The corresponding assembly, shown in Fig. 18 of the '420 patent, was the subject of comparative testimony:

FIG. 18

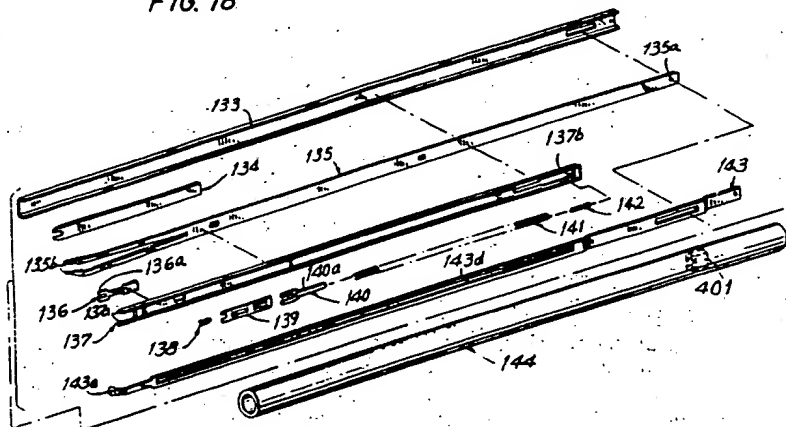


Fig 18 of 420 Patent

It was explained that the pusher bar (143) moves a ligating clip (138) into the channels in the faces of the jaws (135-b). When a clip is in the jaws and the handles are closed, the external channel (133) moves forward over the beveled portion of the jaws, squeezing them together and closing the clip.

To counter this evidence of similarity, U.S. Surgical witnesses testified that the '420/'057 instrument was not a routine adaptation of a prior instrument, and stressed the long development time and engineering difficulties involved in the conversion of the '226 device to endoscopic use. Ethicon challenged these arguments and their factual basis on cross-examination, and elicited testimony that the development time related primarily to unclaimed features of the handle.

There was testimony about the seal and how it was achieved. In its infringement case U.S. Surgical argued that "valve means" in the '420 patent included any known means for sealing the clip applier in the trocar, including valves and gaskets. U.S. Surgical argued at trial as stated in its proposed jury instruction construing this term for infringement purposes:

The structure for performing this [valve means] function includes all such structures contained in trocars known in the art at the time the '420 Patent Application was filed.

U.S. Surgical presented testimony to this effect at trial, thus providing substantial ba-

sis for the jury to find that the "valve means" of the '420 patent was known in the prior art. U.S. Surgical does not now dispute that the "valve means" of its '420 patent is found in prior art endoscopic instruments.

In the course of the extensive explanation and comparisons at trial of the prior art devices and the '420/'057 devices, there was no dispute concerning the content of the references or the structures that they described. There was no dispute concerning the structures described in the '420/'057 patents, or concerning the meaning of technical terms or words of art as used in the prior art or in the patents in suit. The jury was instructed that the technical terms had their plain meaning, as the district court mentioned in its opinion on the post-trial motions. U.S. Surgical did not proffer a particular "construction" of technical terms in order to distinguish the claimed inventions from prior art devices. Neither party departed from the plain meaning of the words that were used in the claims and in the specifications, and in the prior art. Although U.S. Surgical has raised on this appeal the issue of "claim construction," as we shall discuss *post*, there was no argument at trial as to the meaning of technical terms or words of art insofar as they concern the determination of obviousness.

There was opinion evidence on both sides of the question of obviousness. We turn to the objective factors, for as the district court instructed the jury, such evidence must be

considered in the determination of obviousness:

### Objective Factors

Objective factors assist in understanding how the invention was viewed in its field of endeavor, and provide an important practical guide to the decisionmaker. It was explained to the jury that the context in which the invention arose and its reception in the marketplace are indicia of unobviousness, and must be considered.

Witnesses for U.S. Surgical testified that the EndoClip, a commercial embodiment of the '420/'057 patents, had revolutionized endoscopic surgery and made endoscopic gall bladder removal possible. Its commercial success was emphasized, and it was stressed that the EndoClip was the first and for some years the only endoscopic multiple clip applier on the market. U.S. Surgical pointed out that the most relevant prior art, viz. single clip appliers for endoscopic surgery and multiple clip appliers for open surgery, had existed for more than a decade before U.S. Surgical produced the EndoClip for endoscopic surgery. U.S. Surgical presented evidence of the rapid acceptance and adoption of new endoscopic procedures, based on its new multiple clip applier.

Witnesses for Ethicon testified that the growth of endoscopic surgery was due to the miniature video camera, not the multiple clip applier. They testified that before a tiny camera was available to televise images of the abdominal cavity, whereby a team of surgeons could operate with a common view of the surgical field, endoscopic surgery was largely limited to ligation of fallopian tubes; a simple procedure performed by a surgeon peering through an eyepiece. According to Ethicon, U.S. Surgical's EndoClip was developed for and had its only use for tubal ligation, and its later commercial growth was due to the sheer luck of being on the market when endoscopic surgery underwent its rapid expansion upon the capability of televising from inside the body.

Thus U.S. Surgical characterized its '420/'057 multiple clip applier as a pioneering advance in the field of endoscopic surgery, while Ethicon described the '420/'057 instrument as an obvious adaptation of a prior art multiple clip applier, whose commercial success was due to unrelated factors. These conflicting arguments were fully presented at trial. Witnesses, including surgeons, supported both sides. The jury was presented with questions of credibility and weight as well as factual disputes, as the jury decided whether the inventions of the claims

in suit would have been obvious to a person of ordinary skill in the field of the invention at the time the invention was made. Although there were indeed questions of credibility and weight of evidence, the jury was not required to choose between alternative meanings of technical terms or words of art, or decide the scope of the claims, in deciding the question of obviousness. The factual findings of the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the field of the invention, and the objective considerations, did not require "construction" of these claims as set forth in the *Markman* decisions of the Federal Circuit and the Supreme Court.

In reviewing the jury verdict of obviousness, we review whether the jury was correctly instructed on the law, and whether there was substantial evidence whereby a reasonable jury could have reached its verdict upon application of the correct law to the facts, *Railroad Dynamics, Inc. v. A. Stucki Co.*, 727 F.2d 1506, 1512, 220 USPQ 929, 935-36 (Fed. Cir.), cert. denied, 469 U.S. 871 (1984), recognizing that invalidity must be proved by clear and convincing evidence. *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 893, 221 USPQ 669, 673 (Fed. Cir. 1984). Thus we turn to the law, as presented at trial and as instructed by the trial judge.

### The Jury Instructions

Jury instructions are reviewed for correctness, with due attention to their clarity, objectivity, and adequacy, taken as a whole. See *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1570, 24 USPQ2d 1401, 1411 (Fed. Cir. 1992) ("The correctness of a jury instruction . . . is reviewed on appeal to determine whether, on the whole, the jury instructions were adequate to ensure that the jury fully understood the legal issues for each element of the case."); *Trademark Research Corp. v. Maxwell Online, Inc.*, 995 F.2d 326, 339 (2d Cir. 1993) ("A trial court's improper charge constitutes reversible error only when jury instructions, taken as a whole, give the jury a misleading impression or inadequate understanding of the law.") (quoting *Carvel Corp. v. Diversified Management Group, Inc.*, 930 F.2d 228, 232 (2d Cir. 1991)).

[1] The jury was correctly instructed on the presumption of validity; and that Ethicon bore the burden of proving invalidity by clear and convincing evidence. The jury was correctly instructed that in determining whether the inventions of the '420 and '057 patents



obvious to a person of ordinary skill in the art at the time the invention was made. Although questions of credibility exist, the jury was not to weigh alternative forms or words of art. The claims, in deciding obviousness. The factual findings of the prior art, the prior art and the level of ordinary skill in the art, and the objective evidence require "construction as set forth in the Federal Circuit

by verdict of obviousness the jury was correct, and whether there was evidence whereby a reasonable jury could find upon the facts, *see v. A. Stucki Co.*, 10 USPQ 929, 935-36 (1966), 469 U.S. 871 (1984). Invalidity must be supported by convincing evidence. *see v. Computervision Corp.*, 93, 221 USPQ 669, (1993). Thus we turn to the facts and as instructed by

reviewed for correctness to their clarity, obviousness taken as a whole. *Advanced Micro Devices, Inc. v. Intel Corp.*, 1570, 24 USPQ2d 992 (1992) ("The correctness of the jury's verdict is reviewed on the whole, and not on the adequacy of the evidence to ensure that the legal issues were properly presented. *see v. Trademark International, Inc.*, 995 F.2d 1193 (1993) ("A trial court's instructions, taken together with the evidence, must not mislead or misstate the law. *see v. Diversified Industries, Inc.*, 930 F.2d 228, 232

correctly instructed on obviousness, and that Ethicon's invalidity by clear evidence. The jury was correct in determining whether the '20 and '057 patents

were invalid based on obviousness, it was necessary to consider the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and the objective criteria of obviousness. The court correctly explained the *Graham* factors. *See Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). For example, in determining the level of ordinary skill in the art the jury was instructed to consider

evidence submitted by the parties to show:

One, the educational level of active workers in the field;

Two, the types of problems encountered in the art;

Three, the nature of the prior art solutions to those problems;

Four, the activities of others;

Five, the rapidity with which innovations are made in the art;

And six, the sophistication of the technology involved.

The jury instructions included explanation of the principles to be applied in determining obviousness when the invention is a combination of prior art components. The court instructed that the prior art must show not only all of the elements of the claimed combination, but must contain some "teaching, suggestion or incentive" to a person of ordinary skill to combine the known elements in the way that U.S. Surgical combined them:

In order to prove obviousness, the defendants must prove, again by clear and convincing evidence, that one of ordinary skill in the art would have found in the prior art references some teaching, suggestion or incentive to combine the prior art references in the way that U.S. Surgical did in its invention.

The jury instructions stressed that the prior art, to be invalidating, must sufficiently teach or direct a person of ordinary skill how to obtain the result reached by the patentee:

Additionally, if you do find a teaching in the prior art that would motivate one of ordinary skill in the prior art to make the clip applier claimed in the '057 and '420 patents, you must also determine whether there was sufficient teaching or direction in the prior art of how to obtain or build the claimed clip applier such that a person of ordinary skill in the art would have a reasonable likelihood of success in making the invention. In other words, in order to find obviousness, you must find not only that the prior art would teach one of ordinary skill to try the combination of known elements, but also that the prior art would

sufficiently teach or direct one of ordinary skill how to obtain the desired result.

The jury was instructed that in determining obviousness it was to consider the claim as a whole, and that it did not suffice if the individual elements of the invention were known in the prior art:

The reason you must consider the claim as a whole is because there is no dispute that U.S. Surgical's invention is comprised of individual elements which were known in the prior art. The fact that U.S. Surgical's inventions incorporate or combine elements already known in the prior art does not render its patents invalid. Patents can be granted on devices that contain a combination of various elements that are well known in the prior art. U.S. Surgical's claim is that it invented the combination of those elements for the first time in the endoscopic multiple clip applier claimed in the patents in suit.

The instructions on the law of obviousness occupied eight pages of trial transcript. They were correct in law, thorough, and clearly stated. U.S. Surgical now argues that other instructions that it requested should also have been given, and that their omission requires a new trial. The district court explained its denial of these requests in its opinion on the post-trial motions.

U.S. Surgical had requested that the court read to the jury the sentence of 35 U.S.C. §103(a) that states: "Patentability shall not be negated by the manner in which the invention was made," accompanied by the instruction that the jury should give no weight to Ethicon's evidence of "how long or short a time it took to make [the invention]" and "how obvious U.S. Surgical's invention may have seemed to U.S. Surgical's own inventors." The court denied the request. We do not discern reversible error in this denial, for the rejected instruction was encompassed in the instructions that were given, was the subject of expert testimony, and was included in the argument. The court did not commit error in denying an instruction that gave weight to one of the several aspects that were before the jury, and was reasonably viewed as cumulative in the context of the instructions that were given.

U.S. Surgical also requested an instruction that the '226 patent was cumulative prior art and thus did not have to be cited to the patent examiner. In its pre-trial consideration of the issue of inequitable conduct the court, through a special master, had concluded that the '226 patent was cumulative in the circumstances and on the law that then applied in the examination of patents. Whatever the relevance of this point to the issue of

inequitable conduct, which had been decided in favor of U.S. Surgical, the '226 patent was correctly treated as prior art in this litigation. The denial of this instruction is not grounds for a new trial.

U.S. Surgical also requested the instruction that even if the jury found the absence of the secondary consideration of long-felt need, that was "in no way suggestive of obviousness or invalidity." The instruction that was given on the secondary considerations was:

In making these three determinations [the *Graham* factors] you must also consider other surrounding circumstances which are called secondary considerations. These include:

One, whether the alleged invention was commercially successful;

Two, whether the alleged invention satisfied a long-felt need in the art;

Three, whether others were unsuccessful in making the alleged invention;

Four, whether the alleged invention was copied by others in the art;

Five, whether the alleged invention received praise from others in the art;

Six, whether the alleged invention departed from other principles of the art.

In order to determine that secondary considerations such as commercial success are evidence of non-obviousness, there must be a causal connection between the patented features of the invention and the commercial success of the device. If commercial success is attributable to the patented features, then it is evidence of non-obviousness.

U.S. Surgical's requested instruction concerning long-felt need related to the weight to be given to a fact whose existence, and significance, was disputed at trial. The issue of the objective factors was complex and hard-fought at trial, leaving areas of dispute, weight, and perhaps credibility. We discern no error in the court's refusal to comment on a specific aspect, having instructed the jury on all aspects.

U.S. Surgical also requested the instruction that prior art that teaches away from the patented invention is evidence of nonobviousness. That subject was comprehended in the above-quoted instruction that the jury should consider "Six, whether the alleged invention departed from other principles of the art," an argument whose substance had been debated at trial. The refusal of this instruction, in light of the full instructions that were given, is not grounds for a new trial.

U.S. Surgical also states that the district court should have given a curative instruction

to counter Ethicon's suggestion that the patents in suit improperly hindered competition. The record shows Ethicon's persistent and improper innuendos. However, U.S. Surgical reasonably countered this aspect with evidence and argument concerning the purpose of the patent system. Review of the record leads us to conclude, as apparently did the district court, that this tactic did not prejudice the outcome. See *City of New York v. Pullman, Inc.*, 662 F.2d 910, 917 (2d Cir. 1981) ("The district court is not obliged to charge every contention made by the parties at trial, as long as the charge itself, taken as a whole, is fundamentally fair.") (citations omitted), cert. denied, 454 U.S. 1164 (1982). The denial of these instructions (and others offered by both sides) was not a miscarriage of justice, and does not establish reversible error or grounds for a new trial.

U.S. Surgical also argued that its requested instructions construing the claims should have been given, and that the absence of "claim construction" by the district court required a new trial. In accordance with the Court's remand for further consideration in light of *Markman*, we have again reviewed the requested instructions to determine whether any instructions that were improperly refused could reasonably have prejudiced the jury's verdict of invalidity.

In evaluating the refused instructions, we look first at the instructions on claim construction that were given. The issue was interpretation of these means-plus-function claims and their application to find if there was infringement by the Ethicon devices. The district court instructed the jury how to interpret means-plus-function claim elements, and how to apply these claim elements to the accused devices, as follows:

Now, in interpreting the means plus function claim elements, you must determine the following:

One, what function is called for by the claim element, and

Two, what structure, or means, is described in the patent specifications for performing the stated function.

A means plus function claim is only infringed if:

One, the function of the accused device is identical to the function disclosed in the claim element of the patent; and

Two, the structure which performs that function in the accused device is the same as, or the equivalent of, the structure described in the patent specifications.

The second of these two steps requires you to determine whether the accused device includes the same structure as described in the patent or its equivalent. You

may determine Ethicon device mine that a per art would consi the accused change from the patent specifica

This aspect did n validity in this cas states that *Markn* to perform the fir tion, that is, to de the structure or function, and to analysis for the ir instruction; and tl flawed the trial.

For example, instructions for th the '057 patent, s proposed claim co

Clause i) of "means for stor clips." This is a element. The s pret it, is to st clips.

We observe that claim construction of the claim. The told the jury what the patent specifi function:

The structure patent specific function is a c array of surgic the clips toward instrument.

This information solved no dispute the requested inst find infringement the general jury in given, quoted *sup* cally to this claim

In order to find the '057 paten first find that d perform the fu of clips. Then defendants' ac track which b clips and a spr the distal or fa equivalent stru function.

This text, again, same words as in undisputed descr The requested in the accused devi

suggestion that the hindered competitor's persistent

However, U.S. entered this aspect concerning the claim. Review of the decision, as apparently this tactic did not see *City of New York*, 529 F.2d 910, 917 (2d Cir. 1976), is not obliged to be made by the paragon itself, taken as a matter of course. (cited, 454 U.S. 1164) instructions (and as) was not a misstatement not establish for a new trial.

and that its request the claims should at the absence of the district court accordance with the consideration in we again reviewed as to determine that were improperly have prejudicially.

and instructions, we on claim construction. The issue was means-plus-function on to find if there Ethicon devices. and the jury how to claim element these claim elements, as follows:

the means plus, you must deter-

called for by the

or means, is descriptions for invention.

the accused device on disclosed in the patent; and which performs that device is the same the structure descriptions.

two steps requires either the accused device structure as described equivalent. You

may determine that a structure in the Ethicon device is equivalent if you determine that a person of ordinary skill in the art would consider the structure found in the accused device an insubstantial change from the structure disclosed in the patent specification.

This aspect did not concern, or determine, validity in this case. However, U.S. Surgical states that *Markman* requires the trial judge to perform the first portion of this instruction, that is, to determine the function and the structure or means that performs the function, and to give a detailed technical analysis for the infringement portion of the instruction; and that failure to do so fatally flawed the trial.

For example, U.S. Surgical requested instructions for the first element of claim 1 of the '057 patent, starting with the following proposed claim construction:

Clause i) of claim element 1b) reads "means for storing a plurality of surgical clips." This is a means-plus-function claim element. The stated function, as I interpret it, is to store a plurality of surgical clips.

We observe that this part of the proposed claim construction merely repeats the words of the claim. The requested instruction then told the jury what structure was described in the patent specification for performing this function:

The structure or means disclosed in the patent specification for performing this function is a clip track which holds an array of surgical clips and a spring to bias the clips toward the distal or far end of the instrument.

This information from the specification resolved no dispute, for there was none. Next, the requested instruction told the jury how to find infringement: the same instruction as in the general jury instruction that was actually given, quoted *supra*, but now drawn specifically to this claim element:

In order to find that this claim element of the '057 patent has been met, you must first find that defendants' accused devices perform the function of storing a plurality of clips. Then you must find that the defendants' accused devices have a clip track which holds an array of surgical clips and a spring to bias the clips toward the distal or far end of the instrument, or equivalent structure, which performs this function.

This text, again, repeated the function in the same words as in the claim, and repeated the undisputed description in the specification. The requested instruction then stated that if the accused devices perform this function,

using the described means or an equivalent means, there is infringement. That is the same instruction as in the general instruction that was actually given, but made specific to this claim element. We doubt that *Markman* requires the trial judge to instruct as to an undisputed "claim construction" for every term, by simply parroting the words of the claim and then repeating the rule concerning infringement of means-plus-function claims. *Markman* explicitly recognized that the application of the claim to the accused device was for the jury. Indeed, Ethicon objected to this instruction as an improper attempt to direct the jury findings of infringement.

Similar instructions were proffered for the other claim elements. Another rejected instruction started with a similar repetition of the words of the claim as "interpreted" by the judge, and an undisputed restatement of what these words mean:

The final clause of claim element b) ii) calls for "clip closing means for sequentially closing said surgical clips." This is a means-plus-function claim element. The stated function of this particular means-plus-function claim element is "sequentially closing said surgical clips." I interpret this to mean the closing of surgical clips one at a time and one after the other.

In the infringement trial, the issue was not the definition of "sequentially," but the equivalency of the means that was described in the specification with the means that was used in the accused device, and issues concerning the clip advancing means. These aspects do not relate to obviousness, but to infringement. The additional text of this proposed instruction was objected to on its merits by Ethicon as an incorrect application of the law of 35 U.S.C. §112 ¶6. However, this aspect raised no disputed issues with respect to the determination of obviousness in view of the prior art. The dispute concerning the requested instructions related not to the prior art, but to the accused Ethicon devices.

Following is another claim element whose proffered "interpretation" was to repeat the words of the claim:

Claim element a) calls for a trocar having a cannula with valve means for sealing the cannula. The claim element "valve means for sealing said cannula" is a means-plus-function claim element. The stated function, as I interpret it, is to seal the cannula.

There were infringement disputes concerning the valve means, and there was much debate at trial concerning the scope of this claim element as applied to Ethicon's devices. U.S. Surgical requested the instruction that the "valve means" includes and is infringed by all prior art valves and gaskets





reasonably to obviousness.

have not been *v. Metro-North* 55, 273 (2d Cir. 1985), granted if the verdict is against that the damages, for reasons, the jury moving." (*Id. & Co. v. Dun-940*); *Shatter-ey-Owens Ford* USPQ 634, 643 (judicial error occurred against the clear alternative to may be granted, judge.") (citing *Cub Fork Coal*

prejudicial error at the verdict of far weight of the justice requires

the jury requested objections of both the court. U.S. Surgical error, while it was harmless. At the jury might look up definitions explained by witnesses or "obviousness," as the parties gave meaning of claims. U.S. Surgical terms that were given meaning. The court in its post-trial decision to consider the general assumption of standard dictionary which the jury provision of the

that the provision, although not a new trial. See *Id. Corp.*, 470 ("It appears to be that a new trial use a dictionary in cases). U.S. Surgical as to words may have added of obviousness.

Instead, U.S. Surgical seeks a presumption of prejudice and an automatic new trial.

Both sides cite *United States v. Weiss*, 752 F.2d 777 (2d Cir. 1985), as stating the controlling law in the Second Circuit, and each side argues that *Weiss* supports its position. In *Weiss* a criminal defendant was convicted of mail fraud, perjury, and RICO violations, and the jury obtained accounting books without the judge's knowledge or consent. Although the Second Circuit stated that "extra-record information that comes to the attention of a juror is presumptively prejudicial," 752 F.2d at 782-83, the court held that the trial judge's determination that the information had not prejudiced the defendant was not an abuse of discretion, and sustained the conviction.

U.S. Surgical argues that the practice of permitting the jury to have a dictionary would undermine the patentee's right to be its own lexicographer, and thus constitutes reversible error. However, U.S. Surgical does not direct us to any actual or reasonably possible prejudice, or any suggestion that the jury disregarded the court's instructions on the law of obviousness, or the plain meaning of the terms used in the claims and the prior art. Instead, U.S. Surgical argues that it was Ethicon's burden to establish that the jury did not misuse the dictionary, and that since that burden can not be met a new trial is required. However, the holding in *Weiss* was not for an automatic new trial. *Weiss* did not divest the trial judge of authority to decide whether the error, in that case viewed as juror misconduct, was in fact prejudicial.

The district court did not commit prejudicial error by providing the dictionary. A new trial on this ground is not warranted.

#### The Post-Trial Motions

Upon post-trial motions the district court, in a 34-page opinion, discussed validity and infringement. With respect to validity the court discussed the positions of the parties on the teachings of the prior art, the differences between the prior art and the patented inventions, and how the inventions as a whole would have been viewed by a person of ordinary skill in that art.

The district court summarized the evidence that the prior art would have suggested the combination claimed in the '420 patent. The court referred to Ethicon's position that U.S. Surgical had adapted its own multiple clip applier to endoscopic use, and the testimony that the only significant difference from the prior art multiple clip applier was the elongation of the shaft and the seal, and that these were common to all endoscopic instruments.

The district court explained its conclusion that there was substantial evidence in support of the jury verdict of obviousness of the claims in suit. The court also explained its conclusion that the requirements of a new trial had not been met: that the verdict was not against the weight of evidence, that there was not a miscarriage of justice or prejudicial error during trial, or a seriously erroneous result.

#### The Motion Upon Remand

Following the remand from the Supreme Court to the Federal Circuit, U.S. Surgical moved this court to vacate the district court's judgment and order a new trial, on the ground that since the district court had not construed the claims as required by *Markman*, either before or after the jury rendered its verdicts, there is nothing for the Federal Circuit to review on appeal. U.S. Surgical states that it is entitled to a new trial of all issues of validity and infringement except for the verdicts in its favor (infringement of the '420 patent and that there was not inequitable conduct) for which Ethicon did not petition for *certiorari*.

Ethicon, opposing the motion, points out that the district court, in its opinion on the post-trial motions, discussed the claim construction that the jury necessarily adopted on the two aspects of claim scope that were in genuine dispute as applied to the Ethicon devices. Ethicon points out that the district court stated that it agreed with the jury's necessary constructions with respect to the valve means and the clip advancing means, and that the court explained its reasons for sustaining the verdicts based on those constructions. Ethicon points out that under *Markman* this court undertakes to perform any necessary claim construction *de novo*. Ethicon also points out that no disputed claim construction was material to the determination of obviousness.

[4] Concerning U.S. Surgical's proposed instructions on claim construction, as we have discussed, whatever their applicability to the issues of infringement, their omission did not prejudice the issue of obviousness. *Markman* did not hold that the trial judge must always parse the claims for the jury, whether or not there is an issue in material dispute as to the meaning or scope of the claims. Neither this court nor the Supreme Court held that the trial judge must conduct such a rote exercise, on pain of having to retry the case.

Ethicon had objected to the substance of U.S. Surgical's proposed instructions, as well as asserting that they were unnecessary. We need not resolve this issue, for U.S. Surgical

has not shown that there are unclear or ambiguous technical terms or words of art or related aspects of claim scope whose "construction" as requested by U.S. Surgical would negate the verdicts of obviousness. The jury was instructed, without objection, that the language of the claims was to have its plain meaning. There was no dispute as to the meaning of technical terms or words of art as used in either the prior art or the claims. The difference between the prior art and the claimed invention is a question of fact, *Graham*, 383 U.S. at 17, 148 USPQ at 467, and was not overruled by the Court's *Markman* decision.

U.S. Surgical argues that if the district court had construed the claims for the jury, the jury could not have reasonably accepted Ethicon's argument that U.S. Surgical had simply made known endoscopic adjustments in its prior art multiple clip applier. This went to the ultimate question of obviousness, which was decided by the jury upon finding and weighing and evaluating the factual evidence of the *Graham* factors. U.S. Surgical does not explain how any reasonable claim construction that it requested would have deprived the verdict of obviousness of its support. Further, *Markman* does not authorize the trial judge to remove from the jury the factual findings required by *Graham*.

On careful consideration of the substance of the instructions on claim construction that the district court declined to give, and the instructions on the issue of obviousness, all in light of the particular issues in this case concerning the prior art, the claimed invention, and the Court's discussion in *Markman*, we conclude that the omission of the requested instructions did not prejudice the determination of obviousness. The criteria for grant of a new trial have not been met. See *Santa Maria*, 81 F.3d at 273; *Shatterproof Glass*, 758 F.2d at 626, 225 USPQ at 643 (new trial appropriate when there was prejudicial error, or when verdict against weight of the evidence).

### Conclusion

On review of the proceedings at trial, we conclude that there was substantial evidence from which a reasonable jury could have held that the claimed subject matter would have been obvious to a person of ordinary skill in this field at the time the invention was made. The judgment of invalidity is affirmed.

The case was vigorously litigated, with extensive testimony, physical exhibits, and argument. We have been directed to no unfairness or incompleteness or prejudice in the

jury instructions with respect to obviousness. A new trial was properly denied.

### Costs

Costs to Ethicon.

**AFFIRMED; MOTION FOR  
NEW TRIAL DENIED.**

U.S. Court of Appeals  
Federal Circuit

Micro Chemical Inc. v. Great Plains  
Chemical Co.

Nos. 95-1504, -1514

Decided January 3, 1997

### PATENTS

#### 1. Patentability/Validity — Anticipation — Prior sale — Degree of development (\$115.0707.05)

Federal district court erred in holding patent directed to method and apparatus for adding small amounts of ingredients to livestock or poultry feed invalid under on-sale bar of 35 USC 102 based on inventor's offer, before critical date, to sell weighing machine to feedlot manager, since at time of alleged offer, inventor had not reduced invention of patent to practice, had not substantially completed invention, and had not demonstrated high likelihood that invention would work for its intended purpose, and since inventor's "offer" therefore could not trigger on-sale bar.

#### 2. Patentability/Validity — Obviousness — Relevant prior art — Particular inven- tions (\$115.0903.03)

#### Patentability/Validity — Obviousness — Combining references (\$115.0905)

Patent directed to method and apparatus for adding small amounts of ingredients to livestock or poultry feed would not have been obvious in view of prior art weighing machine and prior art volume machines in combination, since there is no evidence of motivation or suggestion to combine prior art machines, since motion of mixing elements in volume machine would have been expected to cause inaccurate weighing, and prior art therefore led away from idea of combining features of weighing and volume machines, and since inventor's extensive efforts to solve problem of isolating weighing system tend to show that one skilled in art would

*ix Mut. Life Ins. Co.*, 300 S.E.2d 610, 620 (1980). In instruction, it is noteworthy that no Federal Trade Commission cases involving enforcement of patents have a "right to make, use, and sell" (or "right to make, use, and sell") patent is held invalid [or is held invalid]. *See* *Unlimited, Inc. v. Concrete Unlimited, Inc.*, 776 F.2d 1537, 1539, 227 Fed. Cir. 1985, cert. denied, 499 U.S. 1025 (1986). "[A]ny patent right to . . . enforce its patent, as threatening alleged infringement. See 35 U.S.C. §281." *Id.* right is not unbounded.

*OnSite Systems, Inc. (OnSite)* Mirafi's law suit was an attempt because it was a "mere attempt to cover what is actually an attempt to interfere with business relationships of a plaintiff nearly all patent infringement are an attempt to interfere with business relationships of a competitor; they are contrary to good faith expectation of

infringement actions initiated in bad faith contribute to the enforcement of the policies of law or the antitrust law." *Ultrasal Ltd.*, 781 F.2d 100 (Fed. Cir. 1985). Bad faith litigation, where a plaintiff sues on a patent he or she knows is not infringed, *id.* at 100-101, is conduct contrary to public policy.

conduct under the North Carolina Competition Statute has been found to be immoral, unethical, oppressive, or substantially injurious. *Johnson*, 300 N.C. at 621 (citing *Spiegel, Inc. v. Comm'n*, 540 F.2d 287, 776 F.2d 100). Thus, bad faith litigation, because it offends public policy, either immoral, unethical, oppressive, or substantially injurious, could violate North Carolina Competition Statute.

Proof of patentee's bad faith must be made by clear and convincing evidence. *Locite*, 781 F.2d at 876, 228 USPQ at 100 (citing *Handgards, Inc. v. Ethicon, Inc.*, 601 F.2d 986, 996, 202 USPQ 342, 351 (9th Cir. 1979), cert. denied, 444 U.S. 1025 (1980)). Moreover, where there is a belief in infringement as well as validity by the patentee, there is a presumption of good faith. *Locite*, 781 F.2d at 877, 228 USPQ at 101. Furthermore, a patentee is normally entitled to rely on a presumption of validity. 35 U.S.C. §282 (1988).

The district court found "a continuing course of conduct pursuant to which Mirafi not only initiated this litigation in bad faith, but engaged in a series of extra-judicial acts, both before and after the actual filing of the litigation, with the purpose, intent and effect of unfairly damaging Murphy and OnSite and secondarily Swanger, in the marketplace." (Conclusion of Law #25, A43). Having thoroughly reviewed the record, this court concludes that the district court's finding of bad faith litigation, which must be supported by clear and convincing evidence is clearly erroneous.

Here, without a determination of whether Mirafi knew the '765 patent was invalid or knew that appellees did not infringe the '765 patent, there can be no bad faith litigation. Moreover, all of Mirafi's extra-judicial activities, including notifying customers and potential customers of the litigation, are within the purview of actions a party with rights to enforce a patent may engage in to enforce the patent. *See Concrete Unlimited*, 776 F.2d at 1539 ("[T]aking business away from the Defendant by threats and infringement actions" is not necessarily unfair competition. Good faith patentees have "the right to exclude others from making, using, and selling the invention and to enforce those rights until the . . . patent [is] held invalid [or expires].") Evidence of prior intent not to litigate the patent, failure to litigate infringement claims against other parties, and communication with a sales force of intent to litigate and actual initiation of suit are all permitted activities. None offend public policy.

We likewise find Swanger's assertion that trial evidence clearly indicates that Mirafi had no expectation of winning and that the lawsuit was filed primarily for the purpose of destroying a competitor's reputation in the market to be unpersuasive. Having carefully reviewed the record, this court finds no evidence that Mirafi did not expect to win the suit against Swanger.

We therefore remand this issue to the district court for a determination of whether

there is clear and convincing evidence that Mirafi initiated litigation knowing the '765 patent was invalid or knowing that appellees did not infringe the '765 patent.

In view of our decision, the infringement issue is moot and that of damages is premature.

**AFFIRMED-IN-PART, REVERSED AND REMANDED-IN-PART.**

### COSTS

No costs.

### Court of Appeals, Federal Circuit

In re Young

No. 90-1368

Decided March 5, 1991

### PATENTS

#### 1. Patentability/Validity — Obviousness — Relevant prior art — In general (§115.0903.01)

Apparently conflicting prior art references must, in making obviousness determination, each be weighed for their power to suggest solutions to artisan of ordinary skill, and all disclosures in prior art must be considered to extent that they are in analogous fields of endeavor and thus would have been considered by person of ordinary skill in field of invention; in weighing suggestive power of each reference, degree to which one reference might accurately discredit another must be considered.

#### 2. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (§115.0903.03)

Applicant's claims for method of generating seismic pulse in water by use of at least three air guns disposed at critical distance from each other are obvious in view of prior patent which expressly teaches exact spacing set forth as limitation in each of applicant's claims, even though additional reference purporting to test different methods of pulse generation suggests avoidance of spacing taught in prior patent, since reference did not accurately test prior patent according to its teachings, particularly those regarding spacing, and therefore artisan of ordinary skill would have afforded reference little weight.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of D. Raymond Young and John C. Wride (method and apparatus for generating an acoustic pulse in a body of water). From decision of Board of Patent Appeals and Interferences upholding final rejection of all claims, applicants appeal. Affirmed.

Richard F. Phillips, Jr., Houston, Texas, for appellants.

Lee E. Barrett, associate solicitor (Fred E. McKelvey, solicitor, with him on brief), Arlington, Va., for appellee Patent and Trademark Office.

Before Newman, Lourie, and Rader, circuit judges.

Rader, J.

Raymond Young and his co-inventor John Wride (collectively Young) appeal from the October 31, 1989 and April 18, 1990 decisions of the Board of Patent Appeals and Interferences (Board). These decisions affirmed the final rejection of all claims in their application. The Board held Young's claimed invention obvious under 35 U.S.C. §103. This court affirms.

### BACKGROUND

Young's application discloses a method and apparatus for generating an acoustic pulse in water. Acoustic pulse technology facilitates offshore seismic exploration. The acoustic pulse generates a large gas bubble in the ocean above geological formations on the ocean floor. The rapid expansion and collapse of the gas bubble create a shock wave in the water. The shock wave propagates through the water into the formations below the ocean bed. As the shock wave passes downward through these formations, each interface between adjoining earth strata reflects a portion of the shock wave. These reflections move upward through the ocean. Hydrophones at the ocean's surface can monitor these reflections. From these monitored reflections, geologists can generate a "seismic section" map which shows the configuration of strata in the ocean bed.

Today's most common sources of seismic shock waves are air guns. These air guns feature a chamber for storing and releasing on command highly compressed air. A high-pressure hose charges the gun with

compressed air for rapid firing during a seismic survey.

Acoustic pulse technology suffers from problems with bubble oscillation. Upon release of the compressed air, the bubble undergoes a rapid initial expansion and collapse. Several more expansions and collapses follow the initial collapse, but with diminishing amplitude. Each of these expansion-collapse events creates an additional shock wave. The geological strata reflect each of these additional shock waves. The multiple reflections, in turn, blur the resolution of the seismic section. Most blurring comes from the first oscillation after the initial bubble collapse.

Acoustic pulse technology uses a "primary-to-bubble ratio" to measure susceptibility to oscillation. This ratio compares the shock wave intensity of the initial expansion-collapse to the intensity of the first oscillation. A high ratio means the secondary shock waves are less likely to blur the seismic section.

Young tries to raise the primary-to-bubble ratio above prior art air gun sources by reducing the amplitude of the first oscillation. Young seeks this result by spacing at least three air guns in a characteristic array. The array separates the guns from each other by a critical distance. The distance,  $D$ , is at least 1.2 times greater than  $R$ , but less than or equal to twice  $R$ .  $R$  is the maximum radius of the initial air bubble from each gun.\* With this spacing, the bubbles from each gun intersect before any single bubble reaches its maximum radius. This intersection dampens the overall oscillation. Young's independent claims each include a spacing limitation within this range.

Independent claim 1 is illustrative:

A method of producing a seismic pulse in a body of water, including the steps of:

(a) disposing in the water a set of at least three air guns, each adapted to produce in the water a gas bubble having maximum radius substantially equal to the quantity  $R$ , where the guns are disposed at depths such that each produces, when fired, a bubble of maximum radius  $R$ , and the guns are disposed such that each gun is separated from each of the nearest guns thereto in the set by a critical distance,  $D$ , where  $D$  is substantially equal to  $\sqrt{2}R$ ; and

(b) firing the air guns substantially simultaneously to produce a seismic pulse in the water.

\* Mathematically,  $D$  is defined by  $1.2 R \leq D \leq 2.0 R$ .

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Young cor aminer's cor argued that ble oscillatio air guns. Yo by Knudsen-lisle in the jo credits the t sen, *Elimin Pulses in O Study*), 23 C 1958) (Knuu tended, a pe seismic explc sidered Carl proved seism

The Board ately applied teachings of asserts as erro Carlisle as a allegedly con

This court properly affir over Carlisle. other referen-jection. Furth merits of any others. There together witi claim 1. See 1376, 217 U 1983).

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inology suffers from oscillation. Upon read air, the bubble undergoes expansion and contractions and collapses, but with diminished these expansion-collapse additional shock strata reflect each of waves. The multiple resolution of the blurring comes from the initial bubble

inology uses a "primary-measure susceptibility" to compare the shock initial expansion-collapse of the first oscillation. The secondary shock to blur the seismic

the primary-to-bubble air gun sources by the of the first oscillation result by spacing at a characteristic array. the guns from each once. The distance,  $D$ , is greater than  $R$ , but less than  $2R$ .  $R$  is the maximum air bubble from each gun, the bubbles from more than one single bubble radius. This intersection of oscillation. Young's method include a spacing angle.

is illustrative: firing a seismic pulse in a direction the steps of: the water a set of at each adapted to produce a gas bubble having substantially equal to the guns are disposed such that the bubbles are disposed from each of the in the set by a critical angle is substantially equal

guns substantially produce a seismic pulse in

s defined by  $1.2 R \leq D$

Young's dependent claims define the number of the guns or their placement relative to each other or to the ocean surface.

The examiner rejected each of the claims as obvious under 35 U.S.C. §103 in light of five prior art references. The examiner relied primarily on U.S. Patent No. 2,619,186 to Carlisle (the "Carlisle patent" or "Carlisle") to reject Young's claims. Carlisle is the only reference cited by the examiner or Board which suggests the air gun spacing in Young's claims.

Young contested the Board's and the examiner's consideration of Carlisle. Young argued that Carlisle concerns reducing bubble oscillation for chemical explosives, not air guns. Young also argued that an article by Knudsen published six years after Carlisle in the journal *Geophysics* expressly discredits the teachings of Carlisle. W. Knudsen, *Elimination of Secondary Pressure Pulses in Offshore Exploration (A Model Study)*, 23 *Geophysics* No. 3 at 440 (July 1958) (Knudsen). Therefore, Young contended, a person of ordinary skill in the seismic exploration art would not have considered Carlisle when developing an improved seismic array.

The Board rejected Young's arguments. The Board held that the examiner appropriately applied Carlisle notwithstanding the teachings of Knudsen. On appeal, Young asserts as error only the propriety of applying Carlisle as a reference in light of Knudsen's allegedly contrary teachings.

#### DISCUSSION

This court must decide whether the Board properly affirmed the examiner's rejection over Carlisle. Young has not challenged the other references cited in the examiner's rejection. Further, Young has not argued the merits of any particular claim apart from the others. Therefore, all claims stand or fall together with representative independent claim 1. See *In re Kaslow*, 707 F.2d 1366, 1376, 217 USPQ 1089, 1096 (Fed. Cir. 1983).

The Carlisle patent — "Seismic Exploration Method" — issued on November 25, 1952. Carlisle concerns minimizing bubble oscillation for chemical explosives used in marine seismic exploration. Carlisle controls bubble oscillation by spacing seismic sources to achieve a reduction of the secondary pressure pulse. Carlisle specifically teaches spacing the seismic sources close enough to allow the bubbles to intersect before reaching their maximum radius. Carlisle spaces the bubble centers closer than two maximum bubble radii, or less than "2.0 R" in Young's nota-

tion. Carlisle, col. 3, lines 57-60. Carlisle explains:

[T]he secondary energy normally available from these sources is dissipated by their mutual intersection and tends to eliminate the secondary seismic impulses created when the walls of the bubbles collapse.

*Id.* at lines 60-64. Thus, Carlisle expressly teaches the spacing limitation in each of Young's claims.

Notwithstanding Carlisle's teachings, Young argues that the Knudsen article discredits Carlisle. Knudsen describes a series of tests which evaluated four proposed techniques for suppressing bubble oscillation. Carlisle was one of the four. Knudsen's article opined that Carlisle yields no appreciable improvement in bubble oscillation suppression. The effective teaching of the Knudsen/Carlisle combination, Young argues, suggests avoidance of the spacing suggested in Carlisle. Therefore, Young would have this court conclude that his use of Carlisle's spacing would not have been obvious.

Young misunderstands the effect that Knudsen has on Carlisle. The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). Even if tending to discredit Carlisle, Knudsen cannot remove Carlisle from the prior art. Patents are part of the literature of the art and are relevant for all they contain. *In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968). For example, in *In re Etter*, 756 F.2d 852, 859, 225 USPQ 1, 6 (Fed. Cir.), cert. denied, 474 U.S. 828 (1985), a reference which disclosed obsolete technology remained in the prior art. This court considered the reference for what it disclosed in relation to the claimed invention.

[1] When prior art contains apparently conflicting references, the Board must weigh each reference for its power to suggest solutions to an artisan of ordinary skill. The Board must consider all disclosures of the prior art, *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976), to the extent that the references are, as here, in analogous fields of endeavor and thus would have been considered by a person of ordinary skill in the field of the invention. The Board, in weighing the suggestive power of each reference, must consider the degree to which one reference might accurately discredit another.

[2] As prior art, the Board correctly weighed Carlisle to determine the patentability of Young's claims. Carlisle expressly teaches both the method and the advantages

of Young's claimed spacing. In fact, Carlisle expressly teaches the exact spacing set out as a limitation in Young's claims. Thus, the Board correctly attributed significant weight to Carlisle in its obviousness determination.

In determining what weight to accord to Carlisle as prior art, the Board also appropriately considered Knudsen's discrediting effect. The Board determined that Knudsen did not convincingly discredit Carlisle. Therefore, the Board appropriately concluded that Knudsen would not have led one skilled in the art to reject Carlisle.

Knudsen did not test Carlisle according to its teachings. For instance, Knudsen did not use an explosive charge in modeling Carlisle. Rather, Knudsen tried to simulate Carlisle with a capacitive electrical discharge in a barrel of oil.

Knudsen did not replicate Carlisle's teachings on spacing. Knudsen tried to model Carlisle by separating the seismic sources by one, two and three bubble radii. Knudsen at 42. At the maximum spacing of three bubble radii, the bubbles will not intersect at all. Carlisle specifically requires spacing to permit bubble intersection. Carlisle, col. 4, lines 47-52. At a spacing of one bubble radius, the two bubbles coalesced into one before the initial collapse. Knudsen at 45. If just one bubble is present, the bubble will oscillate as if no second seismic source was present. Carlisle specifically requires spacing to prevent the formation of one bubble. Carlisle, col. 4, lines 34-37. Finally, at the two bubble radii spacing in Knudsen, the bubbles will just barely intersect. Carlisle requires that the bubbles intersect before each bubble achieves its maximum radius. Carlisle, col. 3, lines 58-60. In sum, Knudsen did not duplicate or appropriately model Carlisle's spacing.

Knudsen's conclusion that Carlisle would "not be effective in eliminating the secondary pressure pulse" also directly contradicts data contained in Knudsen. The Knudsen data point for the two-radii horizontal bubble spacing, although not a completely accurate model of Carlisle, shows a 30% reduction of the secondary pressure pulse. Knudsen at 45, Table 4. This data point represents the only point where Knudsen approximates the spacing shown in Carlisle. At that point, Knudsen confirmed Carlisle's teachings.

The Board found that Knudsen "did not test the Carlisle technique under conditions which are directly comparable to the Carlisle disclosure." Weighing the discrepancies between the Knudsen model and Carlisle's teachings, as well as Knudsen's tendency to confirm Carlisle where the model approxi-

mated Carlisle, the Board concluded: "we do not agree that Knudsen discredits Carlisle."

Because Knudsen did not accurately test Carlisle, an artisan of ordinary skill would not have dismissed Carlisle in light of Knudsen as a whole. It is far more likely that the skilled artisan would have afforded little weight to Knudsen itself. The Board did not err in relying on Carlisle and discounting Knudsen.

### CONCLUSION

Knudsen is not so credible or persuasive of a contrary teaching that it would have deterred the skilled artisan from using the teachings of Carlisle. The examiner's use of Carlisle in his rejection of Young's claims is not clearly erroneous. The Board's decision affirming the examiner's rejection is therefore

**AFFIRMED.**

### Maine Supreme Judicial Court

Nobel v. Bangor Hydro-Electric Co.

No. Cum-90-271

Decided December 17, 1990

### COPYRIGHTS

#### 1. Elements of copyright — Federal pre-emption — Statutory pre-emption (\$205.0803)

Plaintiff's claim for unjust enrichment and conversion under Maine law, arising from defendants' alleged unauthorized use of phrase "energy light," is pre-empted by Copyright Act, 17 USC 301(a), since unjust enrichment claim imposes liability by operation of state law, rather than by additional element of promise to pay, and thus gives right equivalent to rights under Copyright Act, and since conversion claim which does not allege any deprivation of tangible property is equivalent to unauthorized publication claim and is therefore pre-empted.

Appeal from the Maine Superior Court, Cumberland County, Alexander, J.

Action by Michael Nobel against Bangor Hydro-Electric Co., Maine Media Inc., and Brenda Garrand, for breach of contract, unjust enrichment, and conversion. From dismissal of all claims, plaintiff appeals. Vacated in part, affirmed in part, and remanded.

Jeffrey D. Clements  
of Jensen, Baird,  
land, Maine, for

Gerald F. Petrucci  
Friedman, of Pei  
Portland, for c  
dro-Electric Co.

Robert Edmund M  
fendant Maine M

John E. Whalen, I  
fendant Brenda (

Before Wathen, Gl  
and Brody, justic

Glassman, J.

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A.2d 1357, 1359 (

## Appendix 2

Chart comparing the relevant pending claims and the claims in U.S. Patent No. 6,117,764

13. A method of depositing a polymer onto a wafer, comprising:

defining an opening between exposed metal protruding features on said wafer;

providing a plasma; and

exposing said opening to said plasma.

2. A method of depositing a polymer onto a wafer, comprising:

defining an opening between exposed metal protruding features on said wafer;

providing a high-density plasma having a density higher than 10 sup. 10 cm. sup. 3 : and

exposing said opening to said plasma.

23. A method of forming a polymer, comprising:

providing a semiconductor device having at least two exposed metal lines; and

performing a process on said semiconductor device, wherein said process is

defined by a plurality of parameters, comprising:

a source power magnitude,

a bias power magnitude,

a pressure,

a duration, and

a process gas flow rate.

6. A method of forming a polymer, comprising:

providing a semiconductor device having at least two exposed metal lines;

performing a process on said semiconductor device, wherein said process is defined

by a plurality of parameters, comprising:

a source power magnitude,

a bias power magnitude,

a pressure,

a duration, and

a process gas flow rate,

and wherein said step of performing a process comprises:

providing a high-density plasma etcher having a plurality of process settings, comprising:

a source power setting,

a bias power setting,

a pressure setting,

a duration setting, and

a process gas flow rate setting, and

placing said semiconductor device in said etcher;

defining a recess between said exposed metal lines;

filling said recess with said polymer; and

allowing a formation of said polymer above said exposed metal lines.

24. The method in claim 23, wherein said step of performing said process further comprises:

providing a high-density plasma etcher having a plurality of process settings,

comprising:

a source power setting,

a bias power setting,

a pressure setting,

a duration setting, and

a process gas flow rate setting; and

placing said semiconductor device in said etcher.

29. A method of selectively forming a polymer, comprising:  
 providing a semiconductor device having a plurality of exposed protruding features;  
 providing an etcher having high-density plasma process settings, comprising:  
     a source power setting;  
     a bias power setting; and  
     a flow rate setting; and  
 exposing said semiconductor device to a high-density plasma process within said  
 etcher.

10. A method of selectively forming a polymer, comprising:  
 providing a semiconductor device having a plurality of exposed protruding features;  
 providing an etcher having high-density plasma process settings, comprising:  
     a source power setting;  
     a bias power setting; and  
     a flow rate setting;  
 exposing said semiconductor device to a high-density plasma process within said  
 etcher  
 defining at least one recess with said plurality of exposed protruding features, said  
 defining step comprising defining a recess between two protruding  
 features of said plurality of protruding features;  
 filling said recess with said polymer; and  
 restricting formation of said polymer to within said recess, said restricting step  
 comprising preventing a formation of said polymer above said two  
 protruding features, and wherein said preventing step further comprises:  
     establishing said plasma process settings, wherein said  
     plasma process  
         settings interactively define a plurality of  
         overflow parameters that allow formation of said  
         polymer above said two protruding features, and  
         wherein establishing said plasma process settings  
         comprises initiating at least one setting from a  
         selection of settings comprising:  
             a source power setting lower than a  
             source power setting  
             that partially defines one of  
             said overflow parameters,  
             a bias power setting higher than a bias  
             power setting that  
             partially defines one of said  
             overflow parameters, and

a flow rate setting lower than a flow  
rate setting that  
partially defines one of said  
overflow parameters.

1. A method of processing a semiconductor device, comprising:  
providing a first protruding feature on a layer of said semiconductor device;  
providing a second protruding feature on said layer;  
defining a recess between said first protruding feature and said second protruding  
feature;  
and  
plasma-depositing a material within said recess, wherein said material is a  
hydrogen-free  
material comprising carbon and a halogen.

13. A method of providing a polymer between metal features on a wafer, comprising:  
performing a deposition on a site of said wafer; and  
etching said wafer in the same general site used to perform said deposition, said  
etching step comprising etching said wafer generally simultaneously  
with performing said deposition.